CHEMISRTY SENARIO TEST ITEMS.

COMPETENCE BASED CURRICULUM.

03RD.JUNE.2024

Learner of ABCD Secondary School in Wakiso district visited a cement factory in which you work as a technical consultant. You are tasked to prepare a presentation that will help the students understand the production of cement and its impact and thereafter help them tour the factory, The goal is to gain firsthand insight into the processes involved in producing cement.

Task: prepare a detailed description to give the students.

2. Air is a mixture of different gases. It contains 21% oxygen. However, because of the widespread of respiratory illness caused by patients in hospitals. The government's supply of oxygen is insufficient. The government found an investor to help in the mass production of oxygen to be used. As a result, this investor found you as a chemist and wants to recruit you to help in the production. He organizes a meeting and requires that you make a presentation of the process you are to follow to produce the gas.

As a chemist, prepare a speech you are to present during the meeting.

3. Many people in villages make a living by manufacturing local waragi (ethanol). However, the government is against the business due to associated challenges. The district's LC5 chairperson wants to sensitize the community about the large-scale production process and its impact to enable them understand the government position.

The district's LC5 chairperson has contacted you as a student with the knowledge of chemistry in your village to provide the relevant information.

TASK

Make a write up to use upon meeting the community

4. Carbon is one of the most abundant elements on Earth. its compounds are used as fuels. A pilot study has been recently made by the NATIONAL ENVIRONMENT MANAGEMENT

AUTHORITY (NEMA) which shows that the continuous use of carbon compounds as fuels has had a great impact on the environment.

As a chemist in NEMA, you are invited to make a presentation to a community in the Wakiso district about the information generated from the study. Prepare your presentation.

5. You are part of a team of young scientists who have embarked on a voyage to a remote island known as "Elementia Island." This island is known for its unique geological formations and mysterious chemical phenomena. During your expedition, you come across a cave with unusual, glowing crystals. These crystals emit a soft, colourful light.

Description:

information:

Upon closer examination, you find a plaque near the cave entrance with some

6. In your role as a presenter for a local high school environmental workshop, you are tasked with elucidating the science behind common recyclable materials found in

households. The audience comprises students keen on understanding the bonds that exist between the atoms in the molecules of these materials and how they affect their properties.

Task: Craft your presentation to be accessible and engaging for a high school

"Welcome to the Cave of Elementia. The crystals within this cave are a natural phenomenon formed by the reaction of different elements in the ores of copper." You also find that there are three heaps of these ores with labeled;

* Chalcopyrite ($CuFeS_2$)

* Chalcocite (Cu_2S)

* Malachite the formula $Cu_2CO_3(OH)_2$

Your team decides to take samples of 500g of each of the heaps of the ore and use them to determine the most valuable ore given the fact that copper is the most valuable element in the ores and each kilogram of copper costs $10.

Tasks: describe what you would do to help your team while ensuring the safety of everyone on your team.

Item 7

Osukuru village in Tororo district is at the foot of Tororo rock. People of this village for a long time have practiced charcoal burning, animal husbandry, crop husbandry and stone quarrying, recently the animals have started dying and wells are drying up yet the little water available is not fresh. The locals are now wondering why all these are happening.

A sensitization workshop is to be organized to explain the existing the

Situation in the village. The theme of the work shop is MY ENVIRONMENT MY RESPONSIBILITY.

Task:

As chemistry student, write a massage you will deliver upon invitation.

Item 8.

Natural resources have been destroyed as a result of increasing population and human

activities. This has attracted the attention of the officials from the National

Environment Management Authority (NEMA).

The officials are planning to create awareness to the people of the country through

sensitization workshops organized in different district communities.

Task:

As a chemistry student, prepare a short presentation you will deliver during the workshop upon invitation.

Item 9.

In a recent exploration in the regions of northern Uganda by a research team from MAKERERE UNIVERSITY KAMPALA, it was discovered that in a particular village, the soils are extremely red, and some of the researchers predicted the presence of iron ores in the soil. They proposed to the government that they use this opportunity to extract iron from this place. In response to this, the government selected a mining and extraction company to embark on this task.

As a technical adviser of this company, you were requested by your superiors to come with a presentation on what the company should do to ensure the successful implementation of this government project.

Task:

Prepare the presentation.

Item 10.

One of the large-scale uses of chlorine is treating water, to ensure that chlorine is readily available and at a cheaper cost. Government has cleared a local investor to set up a chlorine production plant near Lake Katwe in Kasese district. However, the community is concerned about its environmental effects and how the environmental process will occur.

The class teacher has appointed you to sensitize the other learners.
Task:
Prepare a presentation you will make during the meeting

Item 11.
At an agrochemical store, different fertilisers are sold. Given two pairs of fertilizers, pair A consists of ammonium sulphate- $(NH4)_2S04$ and Ammonium nitrate - $NH4NO_3$ where as

pair B consists of potassium nitrate and calcium nitrate $Ca(NO_3)_2$

Task: provide a methodology approach to a large-scale farmer in Ibanda district, ishongororo- atogyo which fertiliser in each pair A and B he would buy for maximum yields at his farm, include a reason for in case.

(N= 14, H= 1, 0= 16, S= 32, K= 39, Ca= 40)

Item 12

Magnesium sulphate injection is used to treat Hypomagesemia, a health condition of low levels of magnesium in blood, especially administered where it is not possible for medicine to be taken by mouth. Your young sister has been diagnosed with Hypomagnesemia but magnesium sulphate is not in shock at the school pharmacy (health unit) yet needed urgently.

Rx Only
NDC 51754-1000-1
Magnesium Sulfate Injection, USP
50% (5 grams/10 mL)
For IM or IV Use
Must be Diluted before IV Use
10 mL Single Dose Vial

The school pharmacist has advised you to coordinate with your laboratory technician at school and find a way of obtaining a fresh dry sample of magnesium sulphate in the laboratory and later take it to him for use.

Task:

Write a detailed report of how you solve the problem as guided by the pharmacist.

Item 13.

A farmer in kamwenge village has a large piece of land on which he planted bananas and millet for commercial purpose. He realised that a lot of bananas were ripening at the same time and therefore rotted before sale and he considered them wastes which led to a lot of loses.

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Task: advise the farmer on how to to generate a useful product from the wastes and generate products.

ITEM 14

Onyera, living in an area where they use bore hole water, slid, fell and his white shirt became dirty. He decided to use a detergent to clean his shirt. The shirt remained with some brown spots yet he had rinsed it several times.

Task:

As a chemistry learner;

(a) point out the problem Onyera made when choosing a product.

(b) help Onyera understand how the product works.

(c) advice Onyera on the challenges associated with the long term use of the product.

ITEM 15.

Peter is in the process of constructing his house without affecting the environment. He wants to build a good strong house; there are various building materials of different quality and properties on the market. However, he does not know the quality of materials to use.

Peter knows that choosing quality materials depends on the nature of the material and has come to you for advice.

Task:

Use your chemistry knowledge to;

(a) Explain

(i) Categories of materials.

(i1) The suitability of the materials.

(b) Advise peter on the choice of materials.

ITEM 16.

John and Mary were talking in the laboratory. John accidentally knocked a beaker containing a colourless liquid which got poured on his leg. Mary suspected that the colourless liquid was either a base or an acid because John was in great pain.

Unfortunately, the laboratory store was closed that she could not get what to use to confirm what was contained in the beaker to enable her suggest the first aid her friend John.

Task:

As a chemistry learner;

Advise Mary on how she can locally obtain what to use to confirm the nature of the colourless liquid in the beaker to help her suggest the possible first aid. Y

END.